



# U.S. DEPARTMENT OF **ENERGY**

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## **Secretary Chu Announces \$100 Million for Advanced Research Projects**

WASHINGTON, D.C. – U.S. Secretary of Energy Steven Chu announced today that a second round of funding opportunities for transformational energy research projects that will be made available through the Department's Advanced Research Projects Agency-Energy (ARPA-E). At an event today with Commerce Secretary Gary Locke, Secretary Chu announced \$100 million in Recovery Act funding will be made available to accelerate innovation in green technology, increase America's competitiveness and create jobs. Today's announcement comes in advance of the United Nations Climate Change Conference in Copenhagen, Denmark.

"I am pleased to announce ARPA-E's second funding opportunity because it demonstrates our commitment to lead the next Industrial Revolution in clean energy technologies, creating thousands of new jobs while helping cut carbon pollution," said Secretary Chu. "This solicitation focuses on three cutting-edge technology areas which could have a transformational impact."

ARPA-E's first solicitation, announced earlier this year, was highly competitive and resulted in funding 37 projects aimed at transformational innovations in energy storage, biofuels, carbon capture, renewable power, building efficiency, vehicles, and other areas. Today's announcement, which represents the Agency's second round of funding opportunities, is focused specifically on three areas of technology representing new approaches for biofuels, carbon capture, and batteries for electric vehicles:

Areas of focus included under today's funding opportunity include:

1. **Electrofuels.** ARPA-E is seeking new ways to make liquid transportation fuels - without using petroleum or biomass - by using microorganisms to harness chemical or electrical energy to convert carbon dioxide into liquid fuels. Many methods of producing advanced and cellulosic biofuels are

under development to lessen our dependence on petroleum and lower carbon emissions. Most of the methods currently under development involve converting biomass or waste, while there are also approaches to directly produce liquid transportation fuels from sunlight and carbon dioxide, typically using photosynthesis. The objective of this topic is to develop an entirely new paradigm for the production of liquid fuels that could overcome the challenges associated with current technologies. Although photosynthetic routes show promise, overall efficiencies remain low. ARPA-E requests innovative proposals which can overcome these challenges through the utilization of metabolic engineering and synthetic biological approaches for the efficient conversion of carbon dioxide to liquid transportation fuels. ARPA-E specifically seeks the development of organisms capable of extracting energy from hydrogen, from reduced earth-abundant metal ions, from robust, inexpensive, readily available organic redox active species, or directly from electric current. Theoretically such an approach could be 10 times more efficient than current photosynthetic-biomass approaches to liquid fuel production.

2. **Innovative Materials & Processes for Advanced Carbon Capture Technologies (IMPACCT).** Coal-fired power plants currently generate approximately 50% of the electricity in the United States. While coal is a cheap and abundant resource, the continued reliance upon coal as an energy source could potentially have serious consequences in terms of global warming. The objective of this topic is to fund high risk, high reward research efforts that will revolutionize technologies that capture carbon dioxide from coal-fired power plants, thereby preventing release into the atmosphere. ARPA-E seeks to complement existing DOE efforts in the field of carbon capture, led by the Office of Fossil Energy and National Energy Technology Laboratory, by accelerating promising ideas from the basic research stage towards large-scale demonstrations and ultimately, commercialization. Areas of interest include: low-cost catalysts to enable systems with superior thermodynamics that are not currently practical due to slow kinetics; robust materials that resist degradation from caustic contaminants in flue gas; and advanced capture processes that dramatically reduce the parasitic energy penalties and corresponding increase in the cost of electricity required for carbon capture.
3. **Batteries for Electrical Energy Storage in Transportation (BEEST).** In this topic, ARPA-E seeks to develop a new generation of ultra-high energy density, low-cost battery technologies for long electric range plug in hybrid electric vehicles and electric vehicles (EVs). The development of high energy, low cost batteries represents the critical barrier to wide-

spread deployment of EVs, which if achieved would have a profound impact on U.S. oil security, greenhouse gas emissions, and economic growth. The ambitious goals for this program are largely based upon the aggressive long term EV battery goals set forth by the United States Automotive Battery Consortium, a public-private collaboration between the U.S. Department of Energy and leading U.S. automotive companies. If successful, new battery technologies developed under this program will give electrified light-duty vehicles range, performance, lifetime, and cost required to shift transportation energy from oil to the domestically powered U.S. electric grid. ARPA-E's objective is to fund high-risk, high reward research efforts that will promote leadership in this emerging EV battery market.

To submit a concept paper, please visit: <https://arpa-e-foa.energy.gov>. For more information about ARPA-E and previously announced awards please visit: <http://arpa-e.energy.gov/>.

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